

Valorisation of agri-food waste through the use of colourimetry

Adriana R. Machado 1,2 ; Gonalo S 1; Joo Nunes1,3; Manuela Pintado 2

1 Associao CECOLAB-Collaborative Laboratory towards Circular Economy, Business Centre, Rua Nossa Senhora da Conceio, 2, Oliveira do Hospital 3405-155, Portugal

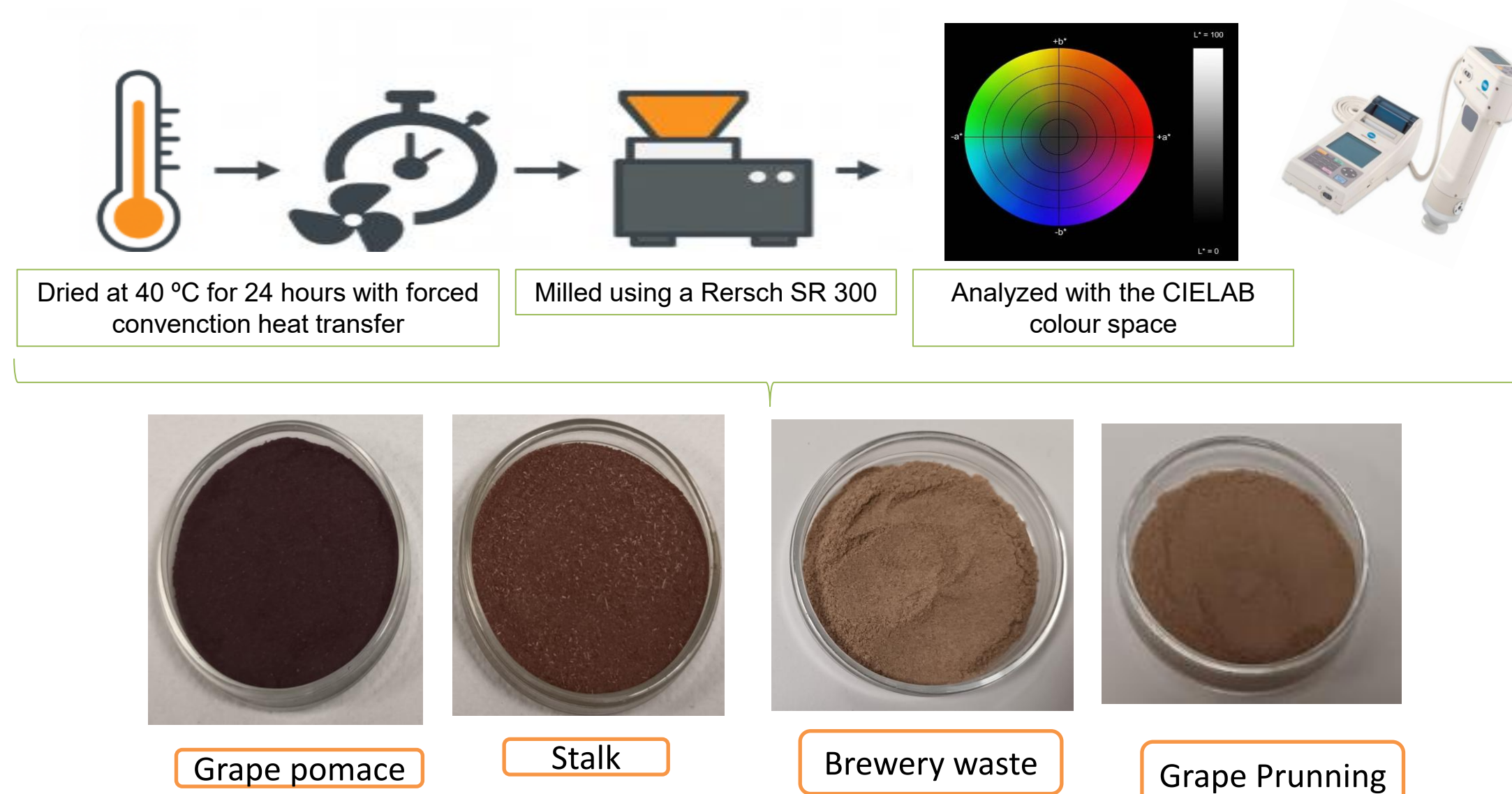
2 Universidade Catlica Portuguesa, CBQF - Centro de Biotecnologia e Qumica Fina – Laboratrio Associado, Escola Superior de Biotecnologia, Rua Diogo Botelho 1327, Porto 4169-005, Portugal

3 Association BLC3 – Technology and Innovation Campus, R&D Unit Centre Bio, Rua Nossa Senhora da Conceio, 2, Oliveira do Hospital 3405-155, Portugal

INTRODUCTION & AIM

- Valorising agri-food waste supports nutrition, functionality, and the circular economy;
 - Pigmented residues (e.g., grape pomace, prunings, stalks, brewing by-products) are natural colours and bioactive sources;
 - Their colourimetric profiles guide the selection and formulation of vegan sausages for consumer-appealing foods.
- This study aimed to characterise the colourimetric properties of flours produced from such waste.

METHOD



•Grape pomace (GP)

- Lowest lightness ($L = 21.18^*$)
- Most intense red ($a = 12.11^*$)
- Linked to anthocyanins & tannins

•Brewery waste (Bw)

- High luminosity
- Highest yellow value ($b = 14.67^*$)
- Linked to melanoidins (Maillard reaction)

•Stalks (S)

- Intermediate luminosity
- Reddish & yellowish tones

•Grape pruning (Gpn)

- Highest luminosity ($L = 54.55^*$)
- Strongest yellowing ($b = 13.29^*$)
- Associated with lignin & not-pigmented phenols

- Differences reflect phenolic composition, lignin and natural pigments (anthocyanins, flavonoids, betalains).
- Although not quantified these compounds were performed, the colorimetric profiles allow preliminary characterization and differentiation.

CONCLUSION

Colour-rich agri-food by-products are promising natural ingredients that enhance nutritional value, functionality, and visual appeal, contributing to more sustainable food systems. These findings provide a foundation for future research and innovation aimed at valorizing by-products in the food chain through sustainable and creative applications.

FUTURE WORK / REFERENCES

Future works may investigate the development of portable colorimetric sensors optimized for the direct monitoring of bioactive compounds in agri-food waste streams.

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